THE T- AND B-CELL SPECIFIC IMMUNITY OF CALVES UNDER THE INFLUENCE OF COMPLEX LIPOSOMAL DRUG

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There are contradictions between traditional and modern views on the immunobiology of pregnancy. In the last month of pregnancy certain changes occur, which are accompanied by a decrease in cellular and humoral protection and activation of lipid peroxidation. These disorders in cows' body are caused by physiological immunosuppression, which increases in pregnant animals due to unsatisfactory conditions for the maintenance at this period. So, the elaboration of complex immunotropic drugs with the immunorehabilitation effect, which will be achieved by the presence of components that provide optimization of critical biochemical mechanisms for maintaining metabolic homeostasis is relevant.

Studies were conducted on cows of the last gestation period. Animals of the control group received intramuscular isotonic solution of sodium chloride, cows of the 1st and 2nd experimental groups — vitamins A, D_3, E, lecithin, L-methionine, L-arginine, sodium selenite intramuscularly 20- and 10-days before calving as liposomal emulsion, at a dose of 0.04 ml/kg of body weight. Calves born from cows of the 2nd experimental group — vitamins A, D_3, E, lecithin, L-methionine, L-arginine, sodium selenite in the form of a liposomal emulsion were administered intramuscularly at 3-day age. Calves received from cows of the 1st experimental and control group, respectively, were injected with isotonic sodium chloride solution. The material for researches was blood of calves at 3-, 7-, 14- and 21-day-old age.

The studies have shown that the introduction to cows at the last month of pregnancy of the liposomal drug causes an immunoregulatory effect on the cellular link of specific immune protection. This is evidenced by the greater number of T-lymphocytes (common, active, theophylline-resistant) in the blood of calves in both experimental groups throughout the study period ($P<0.05$-0.001). At the same time, the number of theophylline-sensitive T-lymphocytes in the blood of calves in both experimental groups on the 7th day of life was lower ($P<0.05$). At the same time, the number of T-suppressors in the blood of calves in the 1st experimental group increased at 14 and 21 days of age ($P<0.05$; $P<0.001$), and in animals of the 2nd experimental group at the 14th day of life ($P<0,001$).

During the study period, a higher level of T-lymphocyte induction to blast transformation with phytohemagglutinin, as well as a greater number of B-lymphocytes in the blood of calves in both experimental groups was observed for the action of the liposomal drug ($P<0.05$–0.001). The increase in the number and functional activity of T- and B-lymphocytes in blood of calves is probably due to both the direct and/or indirect effects of vitamins A, D_3, E, lysine, methionine, arginine and sodium selenite on the expression of T- and B- lymphocytes on the plasma membrane. Thus, the positive effect of the elaborated liposomal drug on the state of the T- and B-cells immunity of calves which will increase their immune potential has been confirmed.

Parenteral administration to cows in the last month of the pregnancy of the complex liposomal drug which includes: vitamins A, D_3, E, lecithin, L-methionine, L-arginine, sodium selenite, causes an increase in the number of T-lymphocytes (common, active and theophylline-resistant), and B-lymphocytes in the blood of calves born of them and increases the functional activity of immunocompetent cells due to the redistribution of the receptor apparatus of T- and B-lymphocytes in the direction of increasing their avidity. In this case, an increase in the functional activity of T-lymphocytes in the reaction of ballast transformation of lymphocytes with phytohaemagglutinin was noted.

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